

**Southwestern Willow Flycatcher Nesting Success, Cowbird
Parasitism, and Habitat Characteristics at the
Pueblo of Isleta, New Mexico**

2003 Final Report

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Introduction

The Southwestern Willow Flycatcher (SWFL, *Empidonax traillii extimus*) breeds in riparian areas of the southwestern United States. The subspecies was listed as federally endangered by the US Fish and Wildlife Service in February 1995. Breeding populations in the middle Rio Grande of New Mexico are found in isolated fragments of suitable habitat situated between large tracts of unsuitable habitat.

The SWFL is one of several declining species that apparently have been impacted by Brown-headed Cowbird (BHCO, *Molothrus ater*) parasitism (US Fish and Wildlife Service 2002, Rothstein and Robinson 1994, Holmes 1993). Among SWFL populations, cowbird impact varies widely. In New Mexico, reported rates vary from 18% in the Cliff Gila Valley to 40% at other sites (US Fish and Wildlife Service 2002).

Habitat characteristics are related to the rate of cowbird parasitism. Cowbird parasitism rates are typically lower in large patches of unfragmented habitat (Smith et al. 2000). In general, parasitism rates and cowbird densities typically decline with increasing densities of low vegetation, probably because nests in dense vegetation are harder for cowbirds to find (US Fish and Wildlife Service 2002, Uyehara and Whitfield 2000, Staab and Morrison 1999, Larison et al. 1998). Parasitism rates are higher when vegetation above nests provides perches for female cowbirds (Averill-Murray et al. 1999, Staab and Morrison 1999, Larison et al. 1998).

A second factor that could influence parasitism rates is the presence of alternative hosts. Although some studies expect a positive correlation between number of cowbirds present and host availability (Thompson et al. 2000, Robinson 1999), the presence of alternative hosts could also reduce cowbird pressure on SWFLs (Robinson et al. 2000, Spautz 1999). Alternative hosts could swamp cowbird laying efforts, give warning calls to potential hosts when cowbirds were present, or deter cowbirds, in the case of non-preferred hosts such as Red-winged Blackbirds (*Agelaius phoeniceus*, Spautz 1999). Finally, vegetation features and alternative host availability could interact to increase or decrease parasitism rates. In 2000, the Pueblo of Isleta site had apparently low parasitism rates in the presence of a large cowbird population. If low parasitism is characteristic of this site, data from the Pueblo could contribute to the understanding of the correlates of parasitism.

The purposes of this study were to: 1. conduct protocol surveys for nesting or migratory willow flycatchers in suitable habitat at the Pueblo of Isleta, 2. monitor nests for success and brood parasitism by Brown Headed Cowbirds, 3. determine the distribution of alternative hosts for BHCO brood parasitism by spot mapping

breeding passerines in the vicinity of SWFL nests, 4. collect data on vegetation at parasitized and unparasitized nests, and 5. train Pueblo personnel in basic survey, monitoring, and vegetation measurement techniques.

Methods

SWFL Surveys

In May 2000, five sites on the Pueblo of Isleta were identified as suitable breeding habitat for SWFLs. Based on previous habitat suitability assessments (Johnson and Smith 2000) and recent habitat modifications, only three suitable sites remained at the Pueblo in 2003. The Near Atrisco Riverside Drain site is too small to support breeding SWFLs. The Isleta Training Dike site was suitable in 2000, with a single territorial male detected that year. In 2003, the site was extensively altered for fire prevention purposes (J. Sorrell, pers. comm.) We conducted standard protocol surveys at the three remaining locations that were surveyed in 2000: South of Isleta Marsh Expanded, South of Highway 147 Bridge, and Isleta Return Channel (Map 1). Clearing of understory shrubs for fire prevention on the northern portion of the South of Isleta Marsh Expanded site reduced the area of suitable nesting flycatcher habitat available in 2003. We surveyed this entire site in 2003. Site names are exactly as reported in Johnson and Smith (2000). All maps showing locations of territorial males and nests were created in ESRI ArcGIS, version 8.2.

We followed survey protocols and habitat evaluations exactly as outlined in the US Fish and Wildlife Service SWFL survey protocol (Sogge et al. 1997). There are no imminent projects planned within this habitat; therefore, we followed a three-visit schedule, per the 2001 protocol addendum (US Fish and Wildlife Service 2000). Commencing on 23 May 2003, we visited each site within the recommended dates: survey 1, 15-31 May; survey 2, 1-21 June; survey 3, 22 June-10 July. The tape playback surveys were conducted between first light and 9:50 am. Each site was accessible to thorough walking surveys within suitable habitat.

The SWFL survey protocol is based on tape playback of the species' vocalizations. Surveyors walked through the habitat, covering the entire survey site, to ensure that the tape could be heard from any point in the habitat. Upon entering the habitat, we listened for vocalizations. After a listening period of several minutes, we played a tape for about 20 seconds, followed by another listening period. This procedure was repeated every 25-50 m as the surveyor walked through the site. Observation of SWFLs is used to determine status as migrant, territorial male, unpaired male, pair (breeding/non-breeding), or fledgling. Any bird detected in May that was not present in later surveys was considered to be a migrant. All SWFLs sighted during this survey were viewed long enough through binoculars to determine whether a bird had been previously banded. SWFLs were identified by vocalizations, and we considered

any birds detected between 15 June and 25 July to be of the southwestern subspecies (*E. t. extimus*, Rourke et al. 1999).

We determined breeding status based on activity of territorial birds. The observer sat quietly in the habitat and watched for the presence of a female, listened for *whitt* and interaction calls between the pair mates, and looked for territorial defense, copulation, carrying of nesting material, carrying of food, incubating, or feeding young.

All survey results were reported on standard SWFL survey and detection forms (Appendix 1, Sogge 1997). In addition, as required by our US Fish and Wildlife Service permit, during the course of the study we informed biologists at the USFWS New Mexico Ecological Services Office and New Mexico Game and Fish Department of all new detections of SWFLs and their nests.

Nest Monitoring

We monitored SWFL nests to determine the fate of nests, productivity, and brood parasitism. Nest monitoring followed standard SWFL nest monitoring protocol (see details in Rourke et al. 1999). We kept nest calendars to estimate transition times, to allow accurate assessment of nest fate with a minimum amount of disturbance at the nest. To avoid instigating premature fledging, we did not visit nests during the last days leading to fledging. A minimum of four days was allowed between nest visits, after which researchers would enter the habitat, determine if the nest site was still active, and quickly check the nest contents with a pole mirror. We approached nests from different directions on each visit, and trails never dead-ended at a nest, to avoid cueing predators. To determine whether a nest successfully fledged, we found and counted fledglings in the territory. All nest site coordinates were recorded with GPS units, taken in North American Datum (NAD 27) and plotted on digital USGS 7.5 minute quad maps (Map 2). We visited the territories in which nests failed at least twice to check for re-nesting attempts.

Alternative Hosts

At the South of Isleta Marsh site we determined the distribution of alternative hosts by spot mapping (Bibby et al. 1992) riparian songbirds. Late fund allocation to the study delayed initiation of the alternative host study. Ideally, spot mapping would have been initiated approximately three weeks earlier. We conducted spot map surveys on nine separate days, from 20 June through 16 July. Spot mapping was limited to the available habitat in the northern two-thirds of the South of Isleta Marsh site. Alternative host distribution was determined within 50 m of all 2003 active SWFL nest sites.

This study concentrated all spot mapping in one area and was not designed for comparison between sites; therefore, we were not concerned with survey bias encountered by starting surveys too early or continuing surveys into the late morning (Bibby et al. 1992). Surveys began at sunrise and continued until song activity died down. We walked slowly through the habitat, documenting auditory and visual detections of songbirds. A paired, singing male of an alternative host species was considered evidence that the species was breeding. We considered carrying of nest material, carrying food, and alarm calling, mobbing, nest attendance, or fledglings to be strong evidence of breeding by alternative hosts. Two males singing simultaneously were considered to be territorial, and often these interactions helped define the functional edge of each respective territory. We mapped the distribution of species located at least ten times (Appendices 2-11). Individuals seen singing from two separate perches or two males singing simultaneously helped determine territory boundaries.

Spot mapping in the vicinity of breeding SWFLs improved our understanding of the behavior and distribution of the flycatchers in this habitat. We were also very aware of the possible impact of our presence in this sensitive habitat. All efforts were made to minimize this disturbance. If we heard SWFL alarm calls during spot mapping visits, we immediately moved to a distance from the SWFL territory at which alarm calls ceased.

Vegetation Characteristics

SWFL researchers in the Middle Rio Grande have agreed that a standardized protocol for characterization of vegetation near nests is necessary for comparison between sites. On 29 July, we met at the San Marcial reach of the Rio Grande with Bureau of Reclamation biologists Larry White and Darrell Ahlers and technician Francoise Leonard. A standardized vegetation measurement protocol was agreed upon, and a data sheet was drawn up. This dialogue continues, but for timely completion of the 2003 field season we followed the initial methodology. This vegetation monitoring protocol resembles a modified BBIRD method (Martin et al. 1997; Stoleson and Finch 1999), including the following: at each nest site an 8 m radius plot (0.02 ha) was centered on the nest. At the nest and at 4 and 8 m in each cardinal direction from the nest we measured canopy cover (using densiometer), determined canopy species, and estimated percent ground cover and predominant species. We measured vertical foliage density at each of the same nine points by counting vegetation touches (hits) on a 10 m vertical pole. Species and size class of shrubs/saplings within 4 m of the nest were recorded. In the event of extremely dense shrub cover, a radius of 1 m was used and the total multiplied by 16 for comparisons with the 4 m plots. We recorded species and size class of trees within 8 m of the nest. We took standard measurements of the nest site (Rourke et al. 1999): nest height, substrate, species, dbh of nest plant, canopy height, distance to edge, distance to water, and water

type. We also determined at each nest if a recent flooding event had inundated the site, and if so, approximately how recently.

Results

SWFL Surveys

We surveyed each of three sites three times within the prescribed survey periods (Table 1, Map 1). We visited an additional site (Isleta Training Dike) once and deemed it unsuitable for SWFL breeding, due to recent habitat alteration. A large percentage of the understory had been removed to mitigate for wildland fire danger in that area of the bosque.

The South of Highway 147 Bridge site is located within a narrow stretch of bosque on the west bank of the Rio Grande. A jetty road and drainage ditch parallel the western edge of this habitat, approximately 0.5 km in length. The north end of the suitable habitat was cleared at this site, during the fire fuels reduction program. This resulted in loss of a portion of the habitat that was surveyed in 2000 (Johnson and Smith 2000). This site did not hold surface water, but it is situated between a drain and the Rio Grande. The habitat is patchy and is not expected to support many SWFLs. The dominant plant species are cottonwood (*Populus spp.*), coyote willow (*Salix exigua*), and Russian olive (*Elaeagnus angustifolia*), with an average canopy height of 15 m. The shrub component was patchy and only intermittently suitable for breeding SWFLs. BHCO were detected during each of the three site surveys in 2003. Two migrants were detected here in 2000, but there were no SWFLs detected at any time during the 2003 surveys.

All SWFLs detected during the 2003 surveys were found on the Isleta Return Channel site. This site was considerably drier than during the 2000 surveys. Where three years ago there was standing water within the western boundary of the habitat east of the railroad berm, the site was entirely dry in 2003. Overbank flow would be unlikely at this location, so the lack of water was most likely a reflection of lower rainfall, lower volume in the return channel, or less available groundwater. The site was approximately 1.2 km in length, with an average canopy height of 15 m. The dominant plant species were cottonwood, coyote willow, and Russian olive, occurring in large monotypic stands. The cottonwood overstory dominated the northern and eastern portions of the habitat. Russian olive and coyote willow dominated the central and western portions of the habitat, where cottonwood existed as single, emergent trees. These trees, especially dead snags, were important as they provided perches for BHCOs, among other bird species in the habitat. BHCOs were abundant throughout the survey period, and they used perches within the habitat extensively.

We spent approximately thirty additional hours spot mapping in the habitat. This effort enhanced the effectiveness of the 23.33 hours of formal tape playback surveillance. Six nests were found in five territories. One nest was a re-nest by a pair that lost an initial nest to predation. In addition to the five pairs that nested, we found two single males during breeding surveys, one of which was loosely territorial (Table 1).

South of Isleta Marsh Expanded had a breeding pair in 2000. This site was another location where significant amounts of breeding habitat had been removed. Extensive understory removal had occurred since the 2000 surveys, resulting in large swatches of early successional vegetation emerging between large brush piles. The successional vegetation is a mixture of both native and nonnative species, leaving little chance that pure stands of native vegetation will result from the clearing process. In addition, the hydrology of this site is much different from 2000, for many of the same reasons that the Isleta Return Channel site was dry. A spot with a marsh pool of standing water 1 m deep in 2000 was entirely dry in 2003. All of the marginal lowlands, which parallel the western edge of the 1.05 km-long site, were nearly dry. The southern portion of the site has a cottonwood canopy averaging 20 m in height. The species composition of the understory was approximately 40% coyote willow and 50% saltcedar (*Tamarix chinensis*) mixed with Russian olive. The southern half of this site remained entirely dry. The site did not have any breeding or migratory SWFLs in 2003. Brown-headed cowbirds were detected on each survey.

We detected a Common Black-Hawk (*Buteogallus anthracinus*) pair at the site during the first survey. We confirmed their nest on 19 June and observed a nestling on 2 July. We saw no evidence that the nestling fledged, but it was quite mature when we observed it in early July.

Table 1. Summary of survey dates and results.

Site	Dates Visited	Adults	Pairs	Territories	Nests
South of Highway 147 Bridge	5/23, 6/19, 6/27	0	0	0	0
Isleta Return Channel	5/23, 6/13, 6/18, 6/19, 6/30	12	5	5	6
South of Isleta Marsh (expanded)	5/23, 6/19, 6/27	0	0	0	0

Nest Monitoring

We detected six nests on five territories (Table 2, Map 2). Nest 1b was a re-nest by a pair that lost their first clutch (1a) to predation. The re-nest attempt by this pair, in the same nest tree, was also depredated.

Unlike 2000, there was cowbird parasitism at two of the six nests. One parasitized nest (# 4) was ultimately depredated, and this pair was not known to re-nest. Nest 2 contained three SWFL eggs and one BHCO egg during early incubation. The BHCO egg hatched at least one day prior to the SWFL eggs and ultimately out-competed the SWFL nestlings. This nest was known to fledge only the BHCO chick.

We located one territory after fledging occurred. The fledglings found in the territory were dependent on their parents and flying only short distances. We found one empty nest in this area, clearly a 2003 nest. Based on the continued territoriality of the adults as we walked through the area, this clutch probably fledged from the nest we found. There are no clutch size data for this nest (#5); however, at least three chicks fledged. Nest 3 was the only nest that certainly fledged four chicks. The nest success rate for this season was 33%.

Table 2. Summary of nests monitored.

Territory	Nest	Date of Discovery	Last Known Nest Contents	Nest Fate
1	1a	6/13	≥3 SWFL nestlings	predation
1	1b	7/9	3 SWFL nestlings	predation
2	2	6/18	≥2 SWFL nestlings, 1 BHCO nestling	1 BHCO fledged
3	3	6/18	4 SWFL nestlings	4 SWFLs fledged
4	4	6/20	1 SWFL nestling, 1 BHCO nestling, 1 unfertilized SWFL egg	predation
5	5	7/9	unknown	≥ 3 SWFLs fledged

Alternative Hosts

Nine species which could be considered common and reasonable alternative hosts for BHCO brood parasitism were found in the Isleta Return Channel survey area. Only the Western Wood-Pewee (*Contopus sordidulus*) was observed feeding a BHCO chick in the nest. Of the nine species, three, Bewick's Wren (*Thryomanes bewickii*), Summer Tanager (*Piranga rubra*), and Western Wood-Pewee had a strong affinity for the cottonwood gallery forest. The Yellow-breasted Chat (*Icteria virens*), Blue Grosbeak (*Passerina caerulea*), Gray Catbird (*Dumetella carolinensis*), and Common Yellowthroat (*Geothlypis trichas*) were rarely found in the cottonwood forest. The yellowthroat was found in only the most mesic, shrub-dominated habitat. The Black-headed Grosbeak (*Pheucticus melanocephalus*) and the Spotted Towhee (*Pipilo maculatus*) appeared to utilize habitats that included both the cottonwood overstory and the woody shrub midstory habitats, including Russian olive, coyote willow, and saltcedar. The map of the Brown-headed Cowbird detections (Appendix 3) illustrates that the species was abundant and present throughout the available habitats of this site.

Nests 1 and 1b, placed in the same nest tree, had the fewest neighboring alternative hosts within both 25 m and 50 m radii (Table 3). The nest with the greatest number of neighboring territorial birds detected within both distances was nest 4. These three nests (1, 1b, and 4) were the three nests depredated during the study. Nests 2, 3, and 5 had moderate numbers of neighbors, and two of them, 3 and 5, successfully fledged SWFL chicks. Nests 1 and 1b, with fewer alternative hosts, were not parasitized, but nest 4, with the largest number of alternative hosts, was.

Table 3. Number of alternate hosts detected within 25 m and 50 m of nests.

Nest ID	Number of Detections	
	25 m	50 m
1	5	25
1b	5	24
2	15	45
3	15	55
4	23	58
5	15	50

Vegetation Characteristics

Nests were placed almost exclusively in Russian olive (Table 4), at a mean height of 3.4 (± 0.4 SE) m. Two nests were placed under a significantly higher canopy, one under closed canopy cottonwood forest. The remaining nests had a mean distance to canopy of 2.1 m. There were no signs of recent flooding anywhere on the Isleta Return Channel survey area. Nearest water to nests was either the Rio Grande (nests 1, 1b) or the return channel east of the habitat (nests 2-5). A second year of data should improve sample sizes for statistical comparisons.

Table 4. Nest site descriptions. Measurements in meters.

Nest #	Nest substrate	Height (from ground to nest)	Distance from nest to top of canopy	Distance to nearest opening	Recent flooding	Distance to surface water
1	Russian olive	4.0	2.2	25	no	60
1b	Russian olive	3.5	1.5	24	no	58
2	Russian olive	3.0	12.0	15	no	17
3	Russian olive	4.7	2.8	35	no	38
4	coyote willow	1.8	2.0	22	no	26
5	Russian olive	3.5	13.0	38	no	43

The mean foliage density measurements at nests exceeded the means at 4 m and 8 m (Table 5). Foliage density in the strata just above the nest height was greater in all instances than the mean foliage density at the same strata at four and eight

m from the nest. In three of five cases canopy closure was highest at the nest (Table 5). Foliage density and canopy closure measurements declined going outward from the nest.

The three depredated nests had various foliage height densities. The nest with the lowest foliage density at the nest (#2) was parasitized. The other parasitized nest (#4) had intermediate foliage density at the nest.

Table 5. Nest plot canopy cover and foliage density.

Nest #	Canopy Closure (%)			Foliage Density Index		
	nest	4 m*	8 m*	nest	4 m*	8 m*
1	95.5	92.3	86.6	3.4	2.3	2.0
1b	94.5	94.7	92.2	2.1	1.8	1.5
2	94.0	90.3	90.8	1.4	0.4	1.0
3	NA	92.1	92.3	2.3	1.7	1.4
4	90.8	92.0	87.7	2.4	2.3	2.1
5	94.5	91.3	89.5	2.4	2.0	1.1

*mean of four measurements reported from points at 4 m or 8 m radii, in the cardinal directions

Discussion

In this study, we addressed two specific tasks of the Southwestern Willow Flycatcher recovery plan (US Fish and Wildlife Service 2002). Through protocol surveys and nest monitoring we addressed task 1: to *"Initiate or continue monitoring of SWFL populations and nests at core occupied and suitable breeding sites."* Surveys indicate that the Isleta Return Channel site remains the core area for breeding SWFLs on the Pueblo of Isleta. However, there were fewer breeding and migratory SWFLs overall in this study than during 2000. This study also began to address task 3: *"Evaluate the relationship between cowbird parasitism, habitat quality, alternative hosts, and SWFL population levels on the Middle Rio Grande."*

In 2003 no SWFLs were located outside of the Isleta Return Channel survey area. One explanation could be the reduction in surface water, especially at Isleta Return Channel and South of Isleta Marsh Expanded. SWFLs typically prefer to nest in areas with standing water or moist soil (Sogge et al. 1997; Johnson et al. 1999).

Five of six nests were placed in Russian olive in 2003, whereas the majority of the nests in 2000 were found in coyote willow, and one was found in saltcedar. There were more nest attempts overall, more frequent use of native vegetation as the nest substrate, and an absence of brood parasitism in 2000. The several years of

low moisture since may have impacted the suitability of the willow habitat and resulted in use of below-optimal nest sites. Reduced available forage, a possible consequence of sub-optimal nest location or fewer insect prey, may have caused SWFLs to forage less efficiently and further from the nest. The resulting exposure to predators and BHCs could lower nest success and increase susceptibility to parasitism.

In addition, suitable habitat was cleared for fire fuel reduction. Isleta Training Dike, where a single territorial male spent the duration of the 2000 breeding season, was no longer at all suitable. Habitat was cleared from the northern edge of the South of Highway 147 Bridge site, the location of two SWFL migrants in 2000. Of greatest concern was the loss of nesting habitat from the northern portion of the South of Isleta Marsh Expanded site. This patch of habitat, which was unsuitable for breeding during the 2003 surveys due to habitat removal, harbored a nesting pair of SWFLs in 2000.

In 2003 there was overall lower nesting activity, and cowbird parasitism increased from 0% to 33% in the study area. The rate of parasitism, although higher than 2000 when no nests were parasitized, is still relatively low in comparison to some other studies (Schweitzer et al. 1998). Nest success was most likely lower in 2003. Our observations were incidental in 2000, as we did not monitor nests through completion, yet the maximum possible success rate was 67% (6 of 9). In 2003, two out of six possible nests (33%) fledged young. This percentage is below the mean (42.6) when compared to other studies from California, New Mexico, and Arizona (Stoleson et al. 2000), but our sample size is too small to make meaningful comparisons. The 2000 surveys provided a good example of the potential capacity of this location under better conditions. The 2003 results reflect SWFL nesting activity under greater environmental stress, including reduced moisture and loss of habitat.

The Pueblo is planning to supplement the existing water levels at the Isleta Return Channel site (J. Sorrell, pers. comm.). We have consulted with SWFL biologists with the Bureau of Reclamation and agree that this could only enhance the suitability of this site, if done in moderation and with accurate timing. An increase in water availability will allow a unique opportunity to test the hypothesis that absence of standing water contributes to lower numbers of birds using the site, poor nest success, and increased parasitism.

Our sample sizes did not allow conclusions regarding correlates of cowbird parasitism. The sample size of 5 nest sites is insufficient to address correlations between vegetative characteristics and successful nests. In addition, a full season of spot mapping will allow us to better determine alternative host territories. Our data suggest that foliage density and canopy closure were used in nest site

selection. The vegetation immediately above each nest was denser than the vegetation at the same height, four meters and eight meters from the nest. This would suggest that the SWFLs selected sites with greater than average overhead coverage. Vertical foliage densities, when averaged over ten, one-meter increments, were greatest at each nest. The foliage density measurement decreased as distance from each nest increased. The nests were placed in dense vegetation in close proximity to edge or areas of thinner vegetation. Site-specific vegetation characteristics and association with predation and brood parasitism will be further investigated in the 2004 field season.

One of the goals of the study is to provide further training in the field to the Pueblo of Isleta staff. Independent monitoring by Pueblo staff will require training in nest searching, nest monitoring, and standardized vegetation measurement skills. We were unable to schedule this training in the initial summer of this project, yet we view it as an important aspect of the study. We recommend that employing a student for this training would be an excellent way to educate Pueblo personnel without upsetting the schedules of permanent staff.

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Maps and Appendices

Map 1. Sites of SWFL surveys at the Pueblo of Isleta, 2003.

Map 2. Map of SWFL observations and nests, Isleta Return Channel site.

Appendix 1. Data sheets for SWFL surveys, the Pueblo of Isleta, 2003.

Appendix 2-11. Alternative host maps by species; including locations, territories, and indication of repeated sighting of a single male (solid line) or simultaneous singing between two males (broken line).

Map 1. Sites of SWFL surveys at the Pueblo of Isleta, 2003.

Map deleted to protect sensitive information.

Map 2. Map of SWFL observations and nests, Isleta Return Channel site.

Map deleted to protect sensitive information.

Appendix 1. Data sheets for SWFL surveys, the Pueblo of Isleta, 2003.

Willow Flycatcher Survey and Detection Form (rev. 4/98)

Site Name South of Isleta Marsh Expanded Was site surveyed in previous year? Yes No
 If yes, what site name was used? _____

County Valencia State NM USGS Quad Name Los Lunas

Is copy of USGS map attached (as required)? ☐ Yes ☐ No

Site Coordinates: Start: _____ UTM
 Stop: _____ UTM Zone 13

Elevation 4,860 (feet) / meters (circle one)

** Fill in additional site information on back of this page **

Survey # Observer(s)	Date (m/d/y) Survey time	Number of WIFLs Found	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Presence of Livestock, Recent sign Y or N	Comments about this survey (e.g., evidence of pairs or breeding, number of nests, nest contents or number of fledges seen; potential threats)
1 <u>H. Smith</u>	Date <u>05/23/03</u> start <u>7:30</u> stop <u>9:30</u> total hrs <u>2:00</u>	0				Y	N	Habitat radically altered by forest clearance. > 50% of suitable habitat removed.
2 <u>H. Smith</u>	Date <u>06/19/03</u> Start <u>05:40</u> Stop <u>06:45</u> total hrs <u>1:05</u>	0				Y	N	
3 <u>H. Smith</u>	Date <u>06/27/03</u> Start <u>07:00</u> Stop <u>09:00</u> total hrs <u>2:00</u>	0				Y	N	
_____	Date _____ start _____ stop _____ total hrs _____							
_____	Date _____ start _____ stop _____ total hrs _____							

Overall Site Summary (Total only resident WIFLs)	Adults	Pairs	Territories	Nests	Were any WIFLs color-banded? Yes No
	0	0	0	0	If yes, report color combination(s) in the comments section on back of form
Total survey hrs <u>5:05</u>					

Name of Reporting Individual Hamilton Smith Date Report Completed 8/15/03

Submit the original of this form. Retain a copy for your records.

Fill in the following information completely. Submit original form. Retain copy for your records.

Name of Reporting Individual Hamilton Smith Phone # 277-3822

Affiliation Natural Heritage New Mexico Email hsmith@unm.edu

Site Name South of Isleta Marsh Expanded

Did you verify that this site name is consistent with that used in previous years? ☒ Yes ☐ No (circle one)

Management Authority for Survey Area (circle one): Federal Municipal/County State ☒ Tribal Private

Name of Management Entity or Owner (e.g., Tonto National Forest) Isleta Pueblo

Length of area surveyed: 1.05 km (specify units, e.g., miles = mi, kilometers = km, meters = m)

Did you survey the same general area during each visit to this site this year? ☒ Yes ☐ No If no, summarize in comments below.

If site was surveyed last year, did you survey the same general area this year? Yes / No If no, summarize in comments below.

Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

- ☐ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
☒ Mixed native and exotic plants (mostly exotic)
☒ Mixed native and exotic plants (mostly exotic)
☐ Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: 40% Willow 50% Tamarisk/Russian Olive, Cottonwood overstory

Average height of canopy: 20 m (specify units)

Was surface water or saturated soil present at or adjacent to site? ☒ Yes ☐ No (circle one)

Distance from the site to surface water or saturated soil: 7 m (specify units)

Did hydrological conditions change significantly among visits (did the site flood or dry out)? Yes ☒ No (circle one)

If yes, describe in comments section below.

Remember to attach a xerox copy of a USGS quad/topographical map (REQUIRED) of the survey area, noting the survey site and location of WIFL detections. You may also include a sketch or aerial photograph showing details of site location, patch shape, survey route in relation to patch, and location of any willow flycatchers or willow flycatcher nests detected. Such sketches or photographs are welcomed, but DO NOT substitute for the required USGS quad map.

Comments (attach additional sheets if necessary):

Willow Flycatcher Survey and Detection Form (rev. 4/98)

Site Name Isleta Training Dike Was site surveyed in previous year? Yes No
If yes, what site name was used? _____

County Bernalillo - Valencia State NM USGS Quad Name Isleta

Is copy of USGS map attached with survey area and WIFL sightings attached (as required)? ☐ Yes ☐ No
Site Coordinates: Start: N _____ UTM
Stop: N _____ UTM Zone 13
Elevation 4,880 feet / meters (circle one)

**** Fill in additional site information on back of this page ****

Survey # Observer(s)	Date (m/d/y) Survey time	Number of WIFLs Found	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Presence of Livestock, Recent sign Y or N	Comments about this survey (e.g., evidence of pairs or breeding, number of nests, nest contents or number of fledges seen; potential threats)
1 <u>H. Smith</u>	Date <u>05/23/03</u> start <u>0700</u> stop <u>07:15</u> total hrs <u>15</u>	<u>0</u>						Habitat radically altered by forest clearance. Unsuitable.
2	Date _____ Start _____ Stop _____ total hrs _____							
3	Date _____ Start _____ Stop _____ total hrs _____							
	Date _____ start _____ stop _____ total hrs _____							
	Date _____ start _____ stop _____ total hrs _____							
Overall Site Summary (Total only resident WIFLs)		Adults	Pairs	Territories	Nests	Were any WIFLs color-banded? Yes No If yes, report color combination(s) in the comments section on back of form		
Total survey hrs <u>15</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>			

Name of Reporting Individual Hamilton Smith Date Report Completed 8/15/03

Submit the original of this form. Retain a copy for your records.

Fill in the following information completely. Submit original form. Retain copy for your records.

Name of Reporting Individual Hamilton Smith Phone # 277-3822
Affiliation Natural Heritage New Mexico Email bhsmith@unm.edu
Site Name Isleta Training Dike
Did you verify that this site name is consistent with that used in previous years? Yes No (circle one)
Management Authority for Survey Area (circle one): Federal Municipal/County State Tribal Private
Name of Management Entity or Owner (e.g., Tonto National Forest) Isleta Pueblo

Length of area surveyed: .95 km (specify units, e.g., miles = mi, kilometers = km, meters = m)

Did you survey the same general area during each visit to this site this year? Yes / No If no, summarize in comments below.

If site was surveyed last year, did you survey the same general area this year? Yes / No If no, summarize in comments below.

Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

- ☐ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow) ☒ Mixed native and exotic plants (mostly native)
☐ Mixed native and exotic plants (mostly exotic) ☐ Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: Cottonwood / Russian Olive / Tamarisk

Average height of canopy: 15 m (specify units)

Was surface water or saturated soil present at or adjacent to site? Yes No (circle one)

Distance from the site to surface water or saturated soil: 5m (specify units)

Did hydrological conditions change significantly among visits (did the site flood or dry out)? Yes No (circle one)

If yes, describe in comments section below.

Remember to attach a xerox copy of a USGS quad/topographical map (REQUIRED) of the survey area, noting the survey site and location of WIFL detections. You may also include a sketch or aerial photograph showing details of site location, patch shape, survey route in relation to patch, and location of any willow flycatchers or willow flycatcher nests detected. Such sketches or photographs are welcomed, but DO NOT substitute for the required USGS quad map.

Comments (attach additional sheets if necessary):

Willow Flycatcher Survey and Detection Form (rev. 4/98)

Site Name Isleta Return Channel Was site surveyed in previous year? Yes No
 If yes, what site name was used? _____

County Bernalillo State NM USGS Quad Name Isleta Los Lunas

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ☒ Yes ☐ No

Site Coordinates: Start: _____ UTM
 Stop: _____ UTM Zone 13
 Elevation 4872 (feet) meters (circle one)

** Fill in additional site information on back of this page **

Survey # Observer(s)	Date (m/d/y) Survey time	Number of WIFLs Found	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Presence of Livestock, Recent sign Y or N	Comments about this survey (e.g., evidence of pairs or breeding, number of nests, nest contents or number of fledges seen; potential threats)
¹ K. Johnson	Date 5/23/03 start 6:15 stop 8:30 total hrs 2.25	5	-	-	N	Y	N	5 singing ♂s detected
² H. Smith K. Johnson	Date 6/13/03 Start 6:00 Stop 9:50 total hrs 3:50	7	2	4	Y	Y	N	2 pairs 3 singing ♂s (sing) 1 nest
³ H. Smith K. Johnson	Date 06/18/03 Start 0520 Stop 0920 total hrs 4:00	6	3	3	Y	Y	N	3 pairs (bhl) 3 nests (total) (Quatre checked)
H. Smith K. Johnson	Date 06/19/03 start 0530 stop 0930 total hrs 4:00	6	3	3	Y	Y	N	Same 3 pairs Same 3 nests (2 nests checked)
H. Smith K. Johnson J. Smith	Date 6/30/03 start 0630 stop 0815 total hrs 1:45	6	3	3	Y	Y	N	3 nests remain active...
Overall Site Summary (Total only resident WIFLs)		Adults	Pairs	Territories	Nests	Were any WIFLs color-banded? Yes <input checked="" type="checkbox"/> No		
Total survey hrs <u>23.33</u>		12	5	5	6	If yes, report color combination(s) in the comments section on back of form		

Name of Reporting Individual Hamilton Smith Date Report Completed 08/15/03

Submit the original of this form. Retain a copy for your records.

Fill in the following information completely. Submit original form. Retain copy for your records.

Name of Reporting Individual K Johnson / H Smith Phone # 277-3822, X223

Affiliation Univ. of NM Email kjohnson@unm.edu

Site Name Isleta Return Channel

Did you verify that this site name is consistent with that used in previous years? ☒ Yes ☐ No (circle one)

Management Authority for Survey Area (circle one): Federal Municipal/County State ☒ Tribal Private

Name of Management Entity or Owner (e.g., Tonto National Forest) Pueblo of Isleta

Length of area surveyed: 1.2 km (specify units, e.g., miles = mi, kilometers = km, meters = m)

Did you survey the same general area during each visit to this site this year? ☒ Yes ☐ No If no, summarize in comments below.

If site was surveyed last year, did you survey the same general area this year? Yes / No If no, summarize in comments below.

Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

- ☐ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
☒ Mixed native and exotic plants (mostly native)
☐ Mixed native and exotic plants (mostly exotic)
☐ Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: Cottonwood, Coyote willow, Russian olive

Average height of canopy: 15 m (specify units)

Was surface water or saturated soil present at or adjacent to site? ☒ Yes ☐ No (circle one) - surface H₂O in channel

Distance from the site to surface water or saturated soil: 5 m (specify units)

Did hydrological conditions change significantly among visits (did the site flood or dry out)? Yes ☒ No (circle one)
If yes, describe in comments section below.

Remember to attach a xerox copy of a USGS quad/topographical map (REQUIRED) of the survey area, noting the survey site and location of WIFL detections. You may also include a sketch or aerial photograph showing details of site location, patch shape, survey route in relation to patch, and location of any willow flycatchers or willow flycatcher nests detected. Such sketches or photographs are welcomed, but DO NOT substitute for the required USGS quad map.

Comments (attach additional sheets if necessary): Site very dry. Only H₂O is in channel.

Less wet than in 2000. One male, non-resident Flycatcher was detected in the habitat during the third survey period. This was a non-territorial male, but was sighted only once (7/3). This habitat was spot-mapped concurrently with the WIFL breeding season which resulted in an additional 30 hours spent in the habitat. WIFL territories were given sufficient buffers during spot map visits.

Willow Flycatcher Survey and Detection Form (rev. 4/98)

Site Name South of Highway 147 Bridge Was site surveyed in previous year? Yes No
If yes, what site name was used? _____

County Bernalillo - Valencia border State NM USGS Quad Name Isleta

Is copy of USGS map attached (as required)? ☐ Yes ☐ No

Site Coordinates: Start: N _____ UTM
Stop: N _____ UTM Zone 13
Elevation 4,890 _____

**** Fill in additional site information on back of this page ****

Survey # Observer(s)	Date (m/d/y) Survey time	Number of WIFLs Found	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Presence of Livestock, Recent sign Y or N	Comments about this survey (e.g., evidence of pairs or breeding, number of nests, nest contents or number of fledges seen; potential threats)
¹ <u>H. Smith</u>	Date <u>05/23/03</u> start <u>06:20</u> stop <u>06:49</u> total hrs <u>:29</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>N</u>	<u>Y</u>	<u>N</u>	
² <u>H. Smith</u>	Date <u>06/19/03</u> Start <u>0655</u> Stop <u>0730</u> total hrs <u>:35</u>	<u>0</u>	<u>0</u>	<u>0</u>		<u>Y</u>	<u>N</u>	
³ <u>H. Smith</u>	Date <u>06/27/03</u> Start <u>06:03</u> Stop <u>06:45</u> total hrs <u>:42</u>	<u>0</u>				<u>Y</u>	<u>N</u>	
_____ _____ _____ total hrs _____	Date _____ start _____ stop _____ total hrs _____							
_____ _____ _____ total hrs _____	Date _____ start _____ stop _____ total hrs _____							
Overall Site Summary (Total only resident WIFLs) Total survey hrs <u>1:46</u>	Adults <u>0</u>	Pairs <u>0</u>	Territories <u>0</u>	Nests <u>0</u>	Were any WIFLs color-banded? Yes No If yes, report color combination(s) in the comments section on back of form			

Name of Reporting Individual Hamilton Smith Date Report Completed 8/15/03

Submit the original of this form. Retain a copy for your records.

Fill in the following information completely. Submit original form. Retain copy for your records.

Name of Reporting Individual Hamilton Smith Phone # 277-3822

Affiliation Natural Heritage New Mexico Email hsmith@unm.edu

Site Name South of Highway 197 Bridge

Did you verify that this site name is consistent with that used in previous years? Yes No (circle one)

Management Authority for Survey Area (circle one): Federal Municipal/County State Tribal Private

Name of Management Entity or Owner (e.g., Tonto National Forest) Isleta Pueblo

Length of area surveyed: .57 km (specify units, e.g., miles = mi, kilometers = km, meters = m)

Did you survey the same general area during each visit to this site this year? Yes No If no, summarize in comments below.

If site was surveyed last year, did you survey the same general area this year? Yes / No If no, summarize in comments below.

Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

- ☐ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
☒ Mixed native and exotic plants (mostly native)
☐ Mixed native and exotic plants (mostly exotic)
☐ Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: Cottonwood / Willow / Russian Olive

Average height of canopy: 15m (specify units)

Was surface water or saturated soil present at or adjacent to site? Yes No (circle one)

Distance from the site to surface water or saturated soil: 10m (specify units)

Did hydrological conditions change significantly among visits (did the site flood or dry out)? Yes No (circle one)

If yes, describe in comments section below.

Remember to attach a xerox copy of a USGS quad/topographical map (REQUIRED) of the survey area, noting the survey site and location of WIFL detections. You may also include a sketch or aerial photograph showing details of site location, patch shape, survey route in relation to patch, and location of any willow flycatchers or willow flycatcher nests detected. Such sketches or photographs are welcomed, but DO NOT substitute for the required USGS quad map.

Comments (attach additional sheets if necessary):

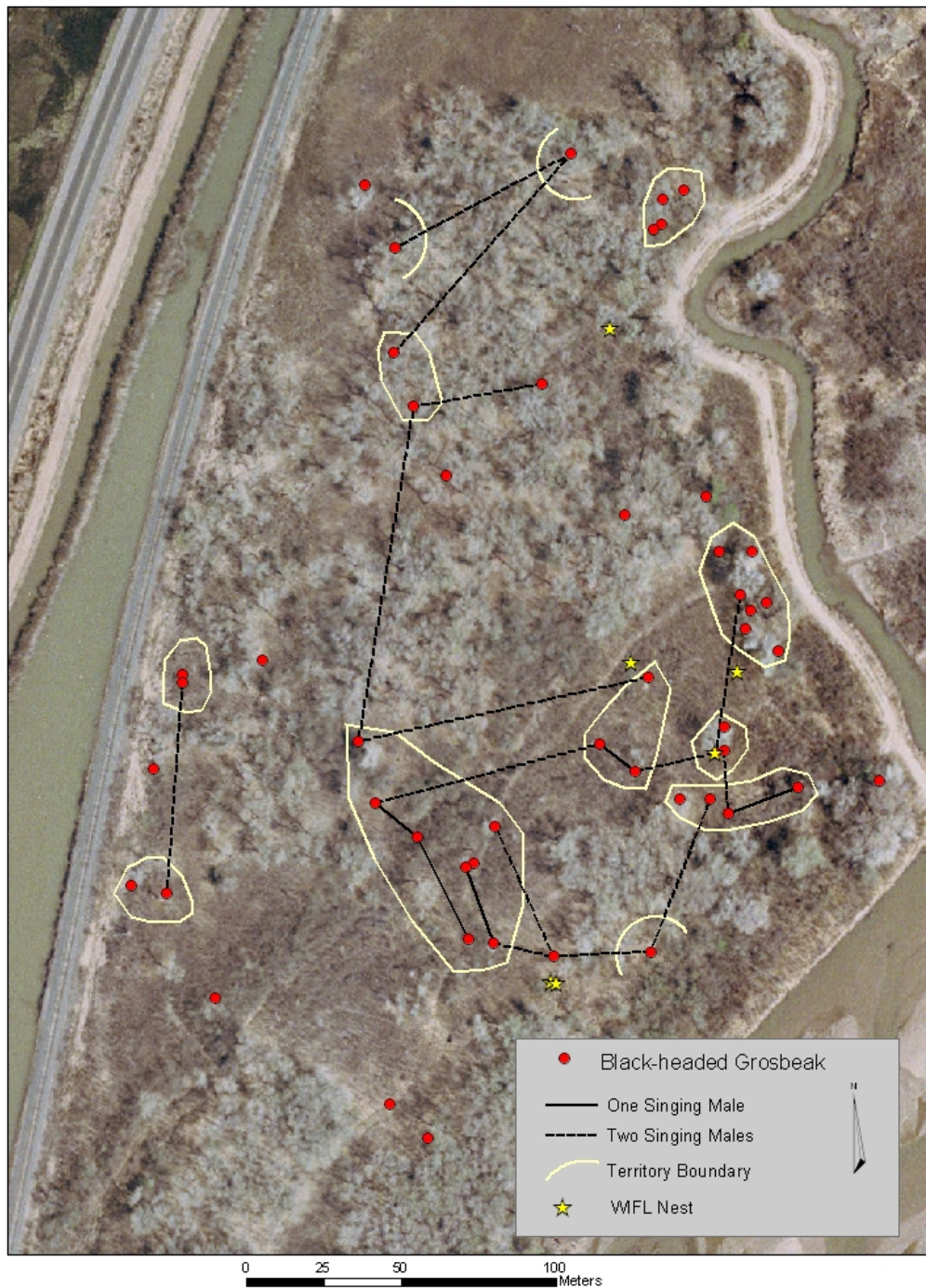
Appendix 2. Bewick's Wren spot map, 2003.



Appendix 3. Brown-headed Cowbird spot map, 2003.



Appendix 4. Black-headed Grosbeak spot map, 2003.



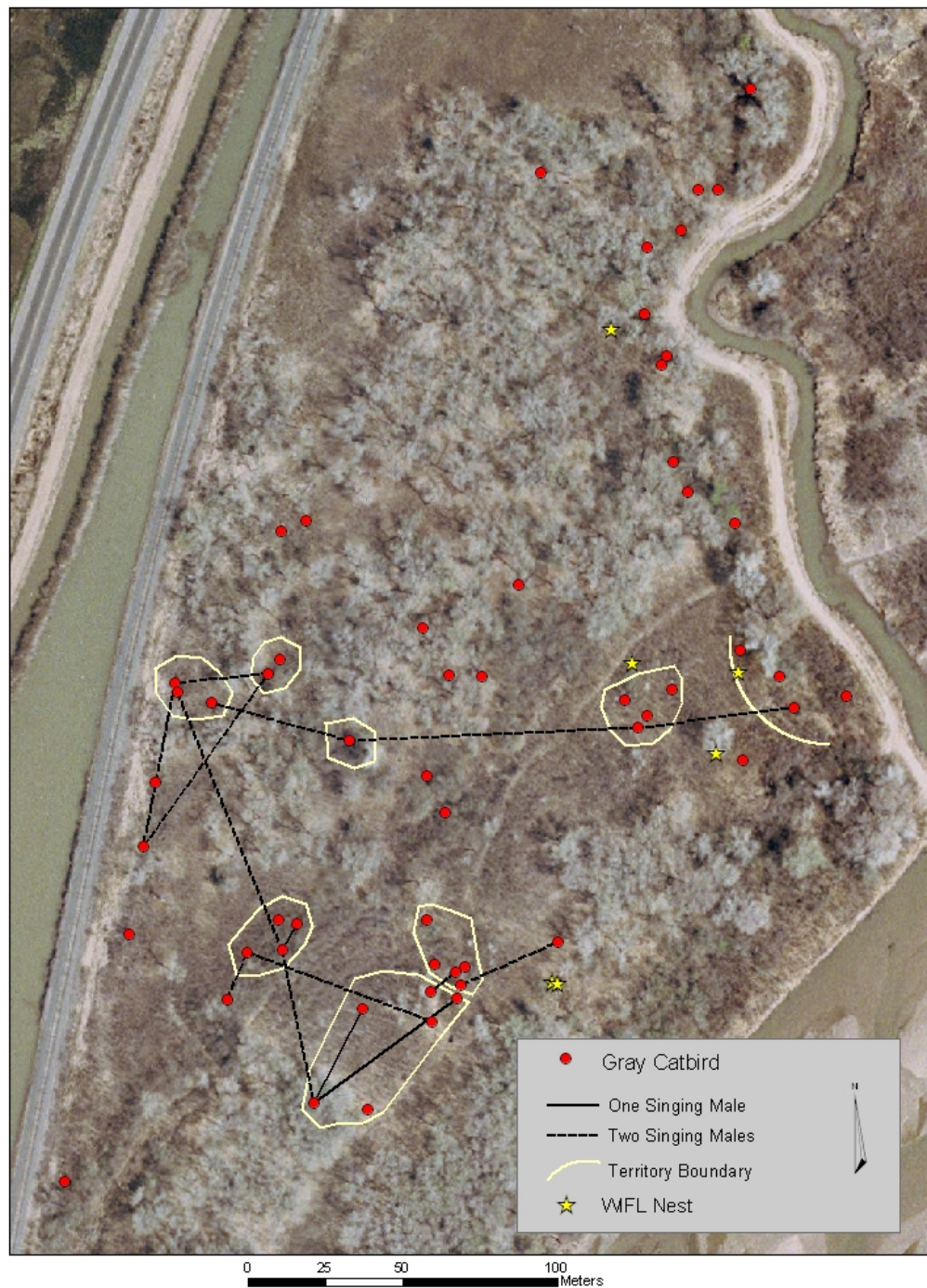
Appendix 5. Blue Grosbeak spot map, 2003.



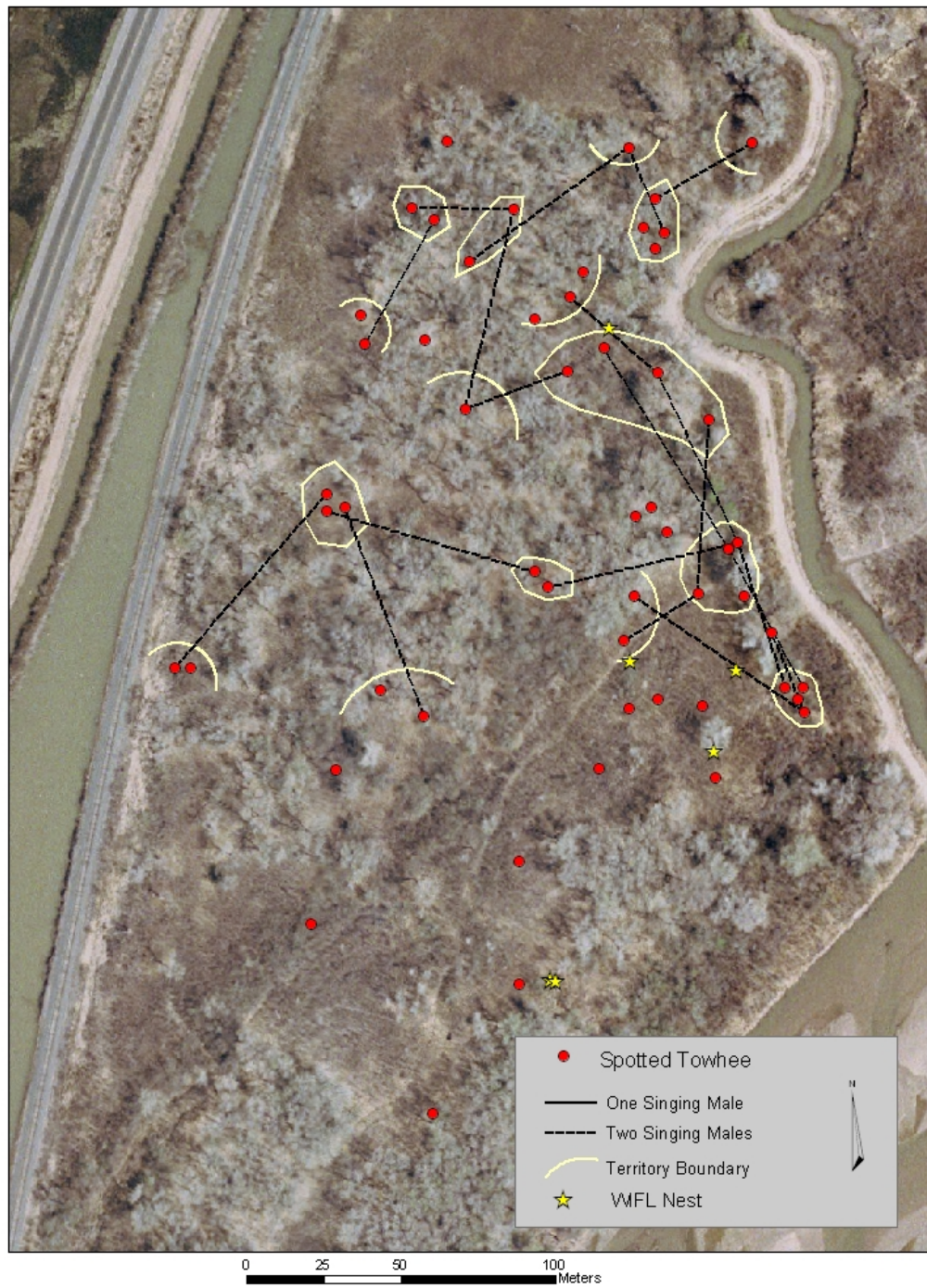
Appendix 6. Common Yellowthroat spot map, 2003.



Appendix 7. Gray Catbird spot map, 2003.



Appendix 8. Spotted Towhee spot map, 2003.



Appendix 9. Summer Tanager spot map, 2003.



Appendix 10. Western Wood-Pewee spot map, 2003.



Appendix 11. Yellow-breasted Chat spot map, 2003.

